



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,237	01/20/2004	Norihiro Moriwaki	1213.43382X00	8065
24956	7590	07/05/2007	EXAMINER	
MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C.			SAMUEL, DEWANDA A	
1800 DIAGONAL ROAD			ART UNIT	PAPER NUMBER
SUITE 370			2616	
ALEXANDRIA, VA 22314				
			MAIL DATE	DELIVERY MODE
			07/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

SF

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/759,237	MORIWAKI, NORIHIKO
	Examiner DeWanda Samuel	Art Unit 2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 20 January 2004.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-14 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 20 January 2004 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date: _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>20 January 2004</u> | 5) <input type="checkbox"/> Notice of Informal Patent Application |
|  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. **Claim 1-14** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**With regard to claim 1,9 and 12** the limitation “at least either”, The statement is confusing and Appropriate corrections are required.

**With regard to claim 2-8 and 10-11 and 13-14,** dependent on rejected independent claims 1,9, and 12 and includes all the limitations of the rejected independent claim limitations .

**With regard to claim 2,** the limitation “Wherein when it”, what are you referring to? Appropriate corrections are required.

**With regard to claim 3** recites the limitation “the forwarding line interface” in line There is insufficient antecedent basis for this limitation in the claim.

**With regard to claim 10,** the limitation "cannot be determined". This statement needs clarity. Appropriate corrections are required.

**With regard to claim 11,** the limitation "first item communication protocol" and "second item communication protocol". This statement needs clarity. Appropriate corrections are required.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. **Claims 1-3 and 7-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Krishnamurthi et al. (US patent 7,164,698) in view of Paatela et al. (US Patent 6,944,168).

**With regard to claim 1,** Krishnamurthi et al. discloses having a packet communication device, Krishnamurthi et al. discloses having a network device 100 (packet communication device") that may be a router or switch, it may also be any other type of network device that processes data packets received from one or more ingress links (column 2 line 52-63).

*comprising: a plurality of line interfaces capable of, of reception and transmission of a packet, at least either;* Krishnamurthi et al. discloses having a plurality of line interfaces 420A and 420B in fig. 4. in which is capable of transmission and reception of data packets.

*a plurality of ports, to which said plurality of line interfaces are connected, and, to which at least one functional processor to be used in order to perform functional processing on an incoming packet received by any of said plurality of line interfaces, can be connected as needed;* Krishnamurthi et al. further discloses the plurality of line interfaces are connected to a plurality of ports in fig. 4...also processing board 410 for processing incoming packets...the processing board includes a plurality of preprocessors modules ( fig. 3 and column 6 line 11-14).

Krishnamurthi et al. does not disclose having a *function item judgment unit for judging a function item to be required for said incoming packet;* Paatela et al. discloses having a router system 200 in fig. 2 with a ingress processing system 500 ("judgment unit") which performs the necessary lookups, policing, and editing of the packet...more

Art Unit: 2616

specifically the ingress processing system has a classifier functional block 502, the policer block 504, and the editor functional block 506 ( column 9 line 16-45).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a network device 100 as taught by Krishnamurthi et al. with a ingress processing circuit 500 as taught by Paatela et al. to provide a mechanism that will verify incoming packets.

Krishnamurthi et al. does not disclose having a *forwarding information generator for determining a forwarding port for said incoming packet in accordance with said function item obtained by judging by said function item judgment unit, and imparting, to said incoming packet, forwarding information, that is information for designating said forwarding port*; Paatela et al. discloses having a router system 200 in fig. 2 with a editing system 700 ("forwarding information generator") also referred to as a packet transformation system, also includes a editing processor 714 with editor instructions (column 9 line 59-67) ...the editor instruction are executed to perform packet modification and provide packet steering information (column 10 line 35-40). Paatela et al. further discloses having a packet direction field 918 (column 12 line 35-49).Paatela et al. also having the results of the policing and the classifier input in the editing system ( column 10 line 1-12). It is inferred that the editing system 700 determines the destination of a packet according to the results from the classifier and policing functional blocks (column 9 line 20-21).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a network device 100 as taught by Krishnamurthi et al. with a editing processor 714 implementing packet steering information into a packet as taught by Paatela et al. to advantageously provide a mechanism that will transmit packets to their correct destination.

*and a forwarding path switching unit for switching a forwarding path when forwarding said incoming packet among said plurality of ports on the basis of said forwarding information;* Krishnamurthi et al. disclose having a switching/forwarding module 120 switches and forward data packets to the appropriate data paths...also the switching/forwarding module 120 may include hardware /software logic for interrogating data packets (or portions of the packets) to determine their destination and causing the data packets to be forwarded to the appropriate data path to a forwarding table ( column 3 line 6-12 and fig. 4).

**With regard to claim 2,** in combination Krishnamurthi et al. and Paatela et al. teaches the packet communication device recited in claim 1. *Wherein when it has been judged by said function item judgment unit that a plurality of functional processing is required for said incoming packet; in order to forward said incoming packets successively to a plurality of ports, to which functional processors capable of executing functional processing required are connected respectively, plural forwarding information are imparted to said incoming packet.* Krishnamurthi et al. discloses having a network

Art Unit: 2616

device 100 (packet communication device") which includes a processing board 410 in fig. 4...the processor board 410 includes a plurality of preprocessing modules("functional processors") in fig. 3 thereby processing packet received from line interfaces and then transmitted to the switching/forwarding modules in fig. 4 ( column 6 line 11-15).

However, Krishnamurthi et al. does not disclose having a packet being judged by said function item judgment unit and plural forwarding information are imparted to said incoming packet. Paatela et al. disclose having a router system 200 in fig. 2 with a ingress processing system 500 ("judgment unit") which performs the necessary lookups, policing, and editing of the packet...more specifically the ingress processing system has a classifier functional block 502, the policer block 504, and the editor functional block 506 ( column 9 line 16-45). Also, Paatela et al. discloses having a editing processor 714 ("forward information generator") with editor instructions (column 9 line 59-67) ...the editor instruction are executed to perform packet modification and provide packet steering information (column 10 line 35-40). Paatela et al. further discloses having a packet direction field 918 (column 12 line 35-49). Paatela et al. also having the results of the policing and the classifier input in the editing system ( column 10 line 1-12). It is inferred that the editing system 700 determines the destination of a packet according to the results from the classifier and policing functional blocks ( column 9 line 20-21).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a network device 100 as taught by Krishnamurthi et al. with a ingress processing system 500 ("judgment unit") and editing

processor 714 ("forward information generator") implementing packet steering information into a packet as taught by Paatela et al. to advantageously provide a mechanism that will transmit packets to their correct destination.

**With regard to claim 3,** in combination Krishnamurthi et al. and Paatela et al. teaches the packet communication device recited in claim 2. *Wherein in order to forward those incoming packets which have been subjected to said plurality of functional processing to any of said plurality of line interfaces, said forwarding information generator further imparts, to said packet, forwarding information corresponding to a port, to which the forwarding line interface is connected.* Krishnamurthi et al. discloses having line interfaces 420A and 420B in which receives packets and transmitting them to a processor board with plurality of preprocessing modules ( fig 3 and column 6 line 11- 14). However, Krishnamurthi et al. does not disclose forwarding information generator further imparts, to said packet, forwarding information corresponding to a port, to which the forwarding line interface is connected. Paatela et al. discloses having a router system 200 in fig. 2 with a editing system 700 ("forwarding information generator") also referred to as a packet transformation system, also includes a editing processor 714 with editor instructions (column 9 line 59-67) ...the editor instruction are executed to perform packet modification and provide packet steering information (column 10 line 35-40). Paatela et al. further discloses having a packet direction field 918 (column 12 line 35-49).Paatela et al. also having the results of the policing and the classifier input in the editing system ( column 10 line 1-12). It is inferred that the editing

Art Unit: 2616

system 700 determines the destination of a packet according to the results from the classifier and policing functional blocks (column 9 line 20-21).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a line interfaces 420A and 420B in which receives packets and transmitting them to a processor board with plurality of preprocessing modules as taught by Krishnamurthi et al. with a editing processor 714 implementing packet steering information into a packet as taught by Paatela et al. to advantageously provide a mechanism that will transmit packets to their correct destination.

**With regard to claim 7,** in combination Krishnamurthi et al. and Paatela et al. teaches the packet communication device recited in claim 1 to 6. *wherein said functional judgment unit and said forwarding information generator are installed in at least one of said plurality of line interfaces;* Krishnamurthi et al. discloses having line interfaces 420A and 420B. However, Krishnamurthi et al. does not discloses having a function item judgment unit and said forwarding information generator are incorporated at least in one of said plural line interfaces. Paatela et al. discloses having a ingress processing system 214 ("function item judgment unit") located on a line card in fig.2 ... also there is a editor 314 with the ingress processing system 214 ("function item judgment unit") which provide routing operations (column 8 line 36-47). Paatela et al. further discloses editor 314 ("forwarding information generator") performs routing operations (column 8 line 37-48).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a line interface 420A and 420 B as taught by Krishnamurthi et al. with a ingress processing system 214 ("function item judgment unit") with a editor 314 ("forwarding information generator") located on line cards as taught by Paatela et al. to modularize the routing mechanisms.

**With regard to claim 8,** in combination Krishnamurthi et al. and Paatela et al. teaches the packet communication device recited in claim 1 to 7. *Wherein at least one said functional processor is further provided with said functional judgment processor and said forwarding information generator.* Krishnamurthi et al. discloses having a processor board 410 ("functional processor") in fig. 4. However, Krishnamurthi et al. does not disclose having functional judgment processor having a said forwarding information generator. Paatela et al. discloses having a ingress processing system 300 ("functional judgment processor") which performs the necessary lookups , policing, editing of the packet ( column 7 line 45-67)...the editor 314 ("forwarding information generator') performs routing operations ( column 8 line 36-47).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a processor board 410 ("functional processor") as taught by Krishnamurthi et al. with a ingress processing system 300 ("functional judgment processor") and the editor 314 ("forwarding information generator') performs routing operations as taught by Paatela et al. to provide a more modular design that will perform a dynamic packet transformation for quality of service.

**With regard to claim 9,** Krishnamurthi et al. discloses having a *packet communication device*, Krishnamurthi et al. discloses having a network device 100 ("packet communication device") that may be a router or switch, it may also be any other type of network device that processes data packets received from one or more ingress links (column 2 line 52-63).

*comprising: a plurality of line interfaces capable of, of reception and transmission of a packet, at least either;* Krishnamurthi et al. discloses having a plurality of line interfaces 420A and 420B in fig. 4, in which is capable of transmission and reception of data packets.

*one or a plurality of functional processors to be used in order to perform functional processing on an incoming packet received by any of said plurality of line interfaces; a plurality of ports to which said plurality of line interfaces and said one or plural functional processors are connected;* Krishnamurthi et al. further discloses the plurality of line interfaces are connected to a plurality of ports in fig. 4...also processing board 410 for processing incoming packets...the processing board includes a plurality of preprocessors modules (fig. 3 and column 6 line 11-14).

Krishnamurthi et al. does not explicitly disclose having a *function item judgment unit* for judging a function item to be required for said incoming packet; Paatela et al. discloses having a router system 200 in fig. 2 with a ingress processing system 500 ("judgment unit") which performs the necessary lookups, policing, and editing of the packet...more

specifically the ingress processing system has a classifier functional block 502, the policer block 504, and the editor functional block 506 ( column 9 line 16-45).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a network device 100 as taught by Krishnamurthi et al. with a ingress processing circuit 500 as taught by Paatela et al. to provide a mechanism that will verify incoming packets.

*a forwarding information generator for determining a forwarding port for said incoming packet in accordance with said function item obtained by judging by said function item judgment unit, and imparting, to said incoming packet, forwarding information, that is information for designating said forwarding port;* Paatela et al. discloses having a router system 200 in fig. 2 with a editing system 700 ("forwarding information generator") also referred to as a packet transformation system, also includes a editing processor 714 with editor instructions (column 9 line 59-67) ... the editor instruction are executed to perform packet modification and provide packet steering information (column 10 line 35-40). Paatela et al. further discloses having a packet direction field 918 (column 12 line 35-49). Paatela et al. also having the results of the policing and the classifier input in the editing system ( column 10 line 1-12). It is inferred that the editing system 700 determines the destination of a packet according to the results from the classifier and policing functional blocks (column 9 line 20-21).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a network device 100 as taught by

Krishnamurthi et al. with a editing processor 714 implementing packet steering information into a packet as taught by Paatela et al. to advantageously provide a mechanism that will transmit packets to their correct destination.

*and a functional processor with a forwarding information generation function for performing functional processing on said incoming packet, determining, as a forwarding port, a port to which any of said plurality of line interfaces is connected on the basis of a result of said functional processing, and imparting, to said incoming packet, forwarding information corresponding to said forwarding port.* Krishnamurthi et al. discloses having a processor board 410 that includes a plurality of preprocessors modules (column 6 line 11-14)...the processor board 410 includes a sprayer module 340 that selects the data path of the packets...the sprayer module 340 contains a plurality of output channels or outputs, each coupled to one of plurality of data paths to a switching /routing module...there are various ways that the sprayer module select a data path ...for example the sprayer module 340 may use predetermined has algorithm, a fixed pattern, randomly, or based on some mechanism for load balancing ( column 5 line 17-35).

**With regard to claim 10,** in combination Krishnamurthi et al. and Paatela et al. teaches the packet communication device recited in claim 9. *wherein said function item judgment unit and said forwarding information generator are incorporated at least in one of said plural line interfaces,* Krishnamurthi et al. discloses having line interfaces 420A and 420B. However, Krishnamurthi et al. does not discloses having a function item

Art Unit: 2616

judgment unit and said forwarding information generator are incorporated at least in one of said plural line interfaces. Paatela et al. discloses having a ingress processing system 214 ("function item judgment unit") located on a line card in fig.2 ... also there is a editor 314 with the ingress processing system 214 ("function item judgment unit") which provide routing operations (column 8 line 36-47). Paatela et al. further discloses editor 314 ("forwarding information generator") performs routing operations (column 8 line 37-48).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a line interface as taught by Krishnamurthi et al. with a ingress processing system 214 ("function item judgment unit") with a editor 314 ("forwarding information generator") located on line cards as taught by Paatela et I. to modularize the routing mechanisms.

*said forwarding information generator which is incorporated in said plural line interfaces, all forwarding ports including a port, to which a line interface for transmitting said incoming packet to the outside is connected, cannot be determined, said incoming packet is forwarded to a port to which said functional processor with said forwarding information generation function is connected.* Krishnamurthi et al. discloses having a plurality of line interfaces 420A and 420B in fig. 4. However, Krishnamurthi et al. does not discloses forwarding information generator which is incorporated in said plural line interfaces. Paatela et al. further discloses having ingress processing system 214

Art Unit: 2616

(“function item judgment unit”) located on a line card in fig.2 with a editor 314 (“forwarding information generator”) performs routing operations (column 8 line 37-48).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a line interfaces as taught by Krishnamurthi et al. with a editor 314 (“forwarding information generator”) performs routing operations as taught by Paatela et al. to provide a more modular design that will transport multiple data streams to and from the line cards.

**With regard to claim 11** in combination Krishnamurthi et al. and Paatela et al. teaches the packet communication device recited in claim 10. *wherein when said incoming packet conforms to a first item of communication protocol, all forwarding ports including a port, to which a line interface for transmitting said incoming packet to the outside is connected are determined by the line interface which has received said incoming packet*, Krishnamurthi et al. discloses having a plurality of line interfaces 420A and 420B in fig 4. However, Krishnamurthi et al. does not discloses having a *incoming packet conforms to a first item of communication protocol*. Paatela et al. discloses having a incoming packet 1300 which includes various embedded headers including layer-4 user datagram protocol (UDP) header 1302, a layer-3 Internet Protocol version-4 (Ipv4) header 1304A, and a layer-2 Ethernet protocol header 1306A column 21 line 41-47). Paatela et al. further discloses having a policing engine 313 performs a variety of functions including ensuring flow conformance to a maximum allowed peak and a contractual obliged committed rate flow (column 8 line 30-35). It is inferred that the packet with the multiprotocols are policed and transmitted to their destination.

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a network device 100 with a plurality of line interfaces transmitting packets as taught by Krishnamurthi et al. with a policing engine 313 that performs policing on incoming packets as taught by Paatela et al. to provide a mechanism that will effectively evaluate the incoming packets and transmit them to their respective ports.

*and wherein when said incoming packet conforms to a second item of communication protocol which is different from said first item, in said functional processor with said forwarding information generation function, a port, to which a line interface for transmitting said incoming packet to the outside is connected, is determined as a forwarding port.* Krishnamurthi et al. discloses having a processor board 410 ("functional processor") and plurality of line interfaces 420A and 420B for transmitting packets.

However, Krishnamurthi et al. does not disclose incoming packet conforms to a second item of communication protocol which is different from said first item and said functional processor with said forwarding information generation function. Paatela et al. discloses having an incoming packet 1300 which includes various embedded headers including layer-4 user datagram protocol (UDP) header 1302, a layer-3 Internet Protocol version-4 (Ipv4) header 1304A, and a layer-2 Ethernet protocol header 1306A (column 21 line 41-47). Paatela et al. further discloses having a policing engine 313 performs a variety of functions including ensuring flow conformance to a maximum allowed peak and a contractual obliged committed rate flow (column 8 line 30-35). It is inferred that

the packet with the multiprotocols are policed and transmitted to their destination.

Paatela et al. discloses having a router system 200 in fig. 2 with a editing system 700 ("forwarding information generator") also referred to as a packet transformation system, also includes a editing processor 714 with editor instructions (column 9 line 59-67) ...the editor instruction are executed to perform packet modification and provide packet steering information (column 10 line 35-40).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have line interfaces 420A and 420B as taught by Krishnamurthi et al. policing a packet with a second protocol and transmitting the outing packet to the respective port as taught by Paatela et al. to provide a mechanism that will effectively evaluate the incoming packets and transmit the to their respective ports .

**With regard to claim 12,** Krishnamurthi et al. discloses having a packet communication device, Krishnamurthi et al. discloses having a network device 100 (packet communication device") that may be a router or switch, it may also be any other type of network device that processes data packets received from one or more ingress links (column 2 line 52-63).

*comprising: a plurality of line interfaces capable of, reception and transmission of a packet, at least either;* Krishnamurthi et al. discloses having a plurality of line interfaces 420A and 420B in fig. 4. in which is capable of transmission and reception of data packets.

*a plurality of functional processors capable of performing the same functional*

*processing on an incoming packet received by any of said plurality of line interfaces; a plurality of ports to which said plurality of line interfaces and said plurality of functional processors are connected; Krishnamurthi et al. further discloses the plurality of line interfaces are connected to a plurality of ports in fig. 4...also processing board 410 for processing incoming packets...the processing board includes a plurality of preprocessors modules ( fig. 3 and column 6 line 11-14).*

Krishnamurthi et al. does not explicitly disclose having a *function item judgment unit for judging a function item to be required for said incoming packet*; Paatela et al. discloses having a router system 200 in fig. 2 with a ingress processing system 500 ("judgment unit") which performs the necessary lookups, policing, and editing of the packet...more specifically the ingress processing system has a classifier functional block 502, the policer block 504, and the editor functional block 506 ( column 9 line 16-45).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a network device 100 as taught by Krishnamurthi et al. with a ingress processing circuit 500 as taught by Paatela et al. to provide a mechanism that will verify specific incoming packets.

Krishnamurthi et al. does not explicitly disclose having a *forwarding information generator for determining a forwarding port of said incoming packet in response to said function item judged by said function item judgment unit, and imparting, to said incoming packet, forwarding information for designating said forwarding port, wherein*

*when the same address information is imparted to said incoming packet to be received successively by any of said plurality of line interfaces, a port to which the same functional processor is connected, of said plurality of functional processors, is fixedly designated as said forwarding port;* Paatela et al. discloses having a router system 200 in fig. 2 with a ingress processing system 500 ("function item judgment unit") that receives incoming packets, classifies and parses the packets according to predetermined criteria such as protocol, enforces policing functions on the packets( column 9 line 40-45)... editing system 700 ("forwarding information generator") also referred to as a packet transformation system, also includes a editing processor 714 with editor instructions (column 9 line 59-67) ...the editor instruction are executed to perform packet modification and provide packet steering information (column 10 line 35-40). Paatela et al. further discloses having a packet direction field 918 ("address information", column 12 line 35-49). Paatela et al. also having the results of the policing and the classifier input in the editing system (column 10 line 1-12). It is inferred that the editing system 700 determines the destination of a packet according to the results from the classifier and policing functional blocks (column 9 line 20-21).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a network device 100 as taught by Krishnamurthi et al. with a ingress processing system 500 as taught by Paatela et al. to advantageously provide a mechanism that will transmit packets to their correct destination.

*and a forwarding path switching unit for switching a forwarding path when forwarding among said plurality of ports on the basis of said forwarding information;* Krishnamurthi et al. disclose having a switching/forwarding module 120 switches and forward data packets to the appropriate data paths... also the switching/ forwarding module 120 may include hardware /software logic for interrogating data packets (or portions of the packets) to determine their destination and causing the data packets to be forwarded to the appropriate data path to a forwarding table ( column 3 line 6-12 and fig. 4).

**With regard to claim 13,** in combination Krishnamurthi et al. and Paatela et al. teaches the communication device recited in claim 12. *Further comprising one or plural functional processors capable of functional processing different from said same functional processing, wherein when it has been judged by said function item judgment unit that plural types of functional processing are necessary for said incoming packet, said forwarding information generator imparts, to said incoming packet, a plurality of forwarding information corresponding to a plurality of ports, to which plural types of functional processors corresponding to functional processing of said plural types are connected respectively.* Krishnamurthi et al. discloses having a processor board 410 ("functional processor") in fig 4. in which includes a plurality of preprocessors modules (fig. 3) which performs additional processing on the data packets before the data packets ( or portions of the data packets) are sent to the respective switching/forwarding modules ( column 5 line 50-61). However, Krishnamurthi et al. does not discloses having a function item judgment unit that plural types of functional processing are

Art Unit: 2616

necessary for said incoming packet, said forwarding information generator imparts, to said incoming packet, a plurality of forwarding information corresponding to a plurality of ports, to which plural types of functional processors corresponding to functional processing of said plural types are connected respectively. Paatela et al. discloses having a router system 200 in fig. 2 with a ingress processing system 500 ("function item judgment unit") that receives incoming packets, classifies and parses the packets according to predetermined criteria such as protocol, enforces policing functions on the packets( column 9 line 40-45)... editing system 700 ("forwarding information generator") also referred to as a packet transformation system, also includes a editing processor 714 with editor instructions (column 9 line 59-67) ...the editor instruction are executed to perform packet modification and provide packet steering information (column 10 line 35-40). Paatela et al. further discloses having a packet direction field 918 ("address information", column 12 line 35-49). Paatela et al. also having the results of the policing and the classifier input in the editing system (column 10 line 1-12). It is inferred that the editing system 700 determines the destination of a packet according to the results from the classifier and policing functional blocks (column 9 line 20-21).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a network device 100 as taught by Krishnamurthi et al. with a ingress processing system 500 as taught by Paatela et al. to advantageously provide a mechanism that will transmit packets to their correct destination.

**With regard to claim 14,** in combination Krishnamurthi et al. and Paatela et al. teaches the packet communication device recited in claim 13. *wherein said function item judgment unit further comprises: a function search unit for searching, on the basis of address information imparted to said incoming packet, types of functional processing required by said incoming packet and a port to which a line interface for transmitting said incoming packet after the processing to the outside is connected;* Krishnamurthi et al. discloses having a network device 100 ("packet communication device"). However, Krishnamurthi et al. does not disclose having function item judgment unit further comprises: a function search unit for searching, on the basis of address information imparted to said incoming packet, types of functional processing required by said incoming packet and a port to which a line interface for transmitting said incoming packet after the processing to the outside is connected. Paatela et al. discloses having a ingress processing system 300 ("function item judgment unit", column 7 line 45-47)...the parsing engine 312 ("function search unit") parse frames received from the preprocessor 310, and generate search keys from data anywhere within the frame. Paatela et al. further discloses having different packet processing stages ( column 8 line 1-67) and after processing the packet it is dispatched to a switch fabric thereby connecting the packet to its destination.

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a network device 100 as taught by Krishnamurthi et al. ingress processing system 300 ("function item judgment unit") which includes a parsing engine 312 ("function search unit") as taught by Paatela et al.

to provide a mechanism that will distinguish the different data traffic that enters in the network device.

*function item search unit for searching function items of functional processors connected to said plural ports and a connection number for each function item; and a port search unit for searching function items of functional processors to be connected correspondingly to each of said plural ports.* Krishnamurthi et al. discloses having sprayer module 340( "port search unit") which receives packets from framer/deframer module 330 and transmit them across a plurality of data paths...the sprayer module 340 contains a plurality of output channels or outputs, each coupled to one of the plurality of data paths to a switching/routing module ( column 5 line 17-35). Also, Krishnamurthi et al. discloses a processor board 410 with plurality of preprocessors modules connected to a plurality of switching/forwarding modules in fig. 4 and fig. 3. Paatela et al. discloses having a the parsing engine 312 ("function search unit") parse frames received from the preprocessor 310, and generate search keys from data anywhere within the frame (column 8 line 9-13).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a processor board 410 with plurality of preprocessors modules and sprayer module 340 as taught by Krishnamurthi et al. along with a parsing engine 312 ("function search unit") as taught by Paatela et al. to provide a mechanism that will accurately connect ports.

Art Unit: 2616

6. **Claims 4-6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Krishnamurthi et al. (US patent 7,164,698) in view of Paatela et al. (US Patent 6,944,168) as applied to claim 2 or 3 above, and further in view of Yoon et al. (US Patent 7,006,504).

**With regard to claim 4** in combination Krishnamurthi et al. and Paatela et al. teaches the packet communication device recited in claim 2 or 3. *Further comprising a forwarding information eliminator for eliminating, after said incoming packet is forwarded to a predetermined port on the basis of said forwarding information, forwarding information corresponding to said port from forwarding information added to said incoming packet.* Krishnamurthi et al. discloses having a network device 100 (packet communication device") with line interfaces 420A and 420B in which transmit and receives packets (fig. 4 and column 6 line 11-49). However, Krishnamurthi et al. does not discloses having a forwarding information eliminator for eliminating, after said incoming packet is forwarded to a predetermined port on the basis of said forwarding information, forwarding information corresponding to said port from forwarding information added to said incoming packet. Yoon et al. discloses having a connection terminating procedure of the VC merging apparatus...also removing the egress information ("forwarding information") from the lookup memory (column 11 line 26-33) after the connections have been made. Yoon et al. also discloses having forwarding information added to incoming packets ( column 7 line 7-11). It is inferred that after packet with forwarding information are transmitted the former information is deleted.

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a network device 100 (packet communication device") as taught by Krishnamurthi et al. with a connection terminating procedure Yoon et al. to provide a dynamic routing mechanism.

**With regard to claim 5,** in combination Krishnamurthi et al. and Paatela et al. teaches the packet communication device recited in claim 2 or 3. *The packet communication device according to Claim 2 or 3, wherein as said incoming packet is successively forwarded on the basis of said forwarding information, said forwarding information generator further imparts, to said incoming packet, subsequent forwarding information for designating in said forwarding information which information concerning the subsequent forwarding destination is,* Krishnamurthi et al. discloses having a line interfaces 420A and 420B in which packets are transmitted and received (fig.4). However, Krishnamurthi et al. does not disclose having forwarding information generator further imparts, to said incoming packet, subsequent forwarding information for designating in said forwarding information which information concerning the subsequent forwarding destination is. Paatela et al. discloses having a ingress processing system 214 ("function item judgment unit") located on a line card in fig.2 ...also there is a editor 314 with the ingress processing system 214 ("function item judgment unit") which provide routing operations (column 8 line 36-47). Paatela et al. further discloses editor 314 ("forwarding information generator") performs routing operations (column 8 line 37-48).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a line interface 420A and 420 B as taught by Krishnamurthi et al. with a ingress processing system 214 ("function item judgment unit") with a editor 314 ("forwarding information generator") as taught by Paatela et l. to provide a mechanism that will seamlessly route packets to their destination.

Krishnamurthi et al. does not discloses having a *forwarding information renewal unit for renewing, after said incoming packet is forwarded to a port to be designated in said forwarding information and said subsequent forwarding information, said subsequent forwarding information*. Yoon et al. discloses deleting registration on the ingress connection, the registration on the egress connection is deleted from an egress connection table (column 13 line 32-34). It is inferred that that after a connection has been made the connection is terminated and all the forwarding information in the registration is deleted.

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a network device 100 as taught by Krishnamurthi et al. that deletes registration on the ingress connection, the registration on the egress connection is deleted from an egress connection table as taught by Paatela et al. to provide a mechanism that will release all the connection information for a particular communication session.

**With regard to claim 6,** in combination Krishnamurthi et al., Paatela et al. and Yoon et al. teaches the packet communication device recited in claim 5. *Wherein said forwarding information and said subsequent forwarding information will be erased before said incoming packet is outputted to the outside from any of said plurality of line interfaces.* Krishnamurthi et al. discloses having a plurality of line interfaces 420A and 420B in fig. 4. However, Krishnamurthi et al. does not disclose forwarding information

Art Unit: 2616

and said subsequent forwarding information will be erased before said incoming packet is outputted to the outside from any of said plurality of line interfaces. Yoon et al. discloses while the egress connection is being establish , it should be deleted, respectively ( column 13 line 27-31)... deleting registration on the ingress connection, the registration on the egress connection is deleted from an egress connection table (column 13 line 32-34).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a network device 100 as taught by Krishnamurthi et al. that deletes registration on the ingress connection, the registration on the egress connection is deleted from an egress connection table as taught by Paatela et al. to provide a mechanism that will release all the connection information for a particular communication session.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DeWanda Samuel whose telephone number is (571) 270-1213. The examiner can normally be reached on Monday-Thursday 8:30-5:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Q. Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2616

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DeWanda Samuel  
6/28/2007

  
RICKY Q. NGO  
SUPERVISORY PATENT EXAMINER